KONOROV, L.A., kand. tekhn. nauk.

Solving precisive problems in airplane construction. Trudy MAI no.91:52-79 '57. (MIRA 10:12)
(Airplanes--Design and construction)

AUTHOR: Konorov, L. A.

SOV/147-58-4-13/15

TITLE: Inspection of the Accuracy of Fit Between Aircraft Components (Kontrol' tochnosti vzaimnoy uvyazki chastey samoletov)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya tekhnika, 1958, Nr 4, pp 109-122 (USSR)

ABSTRACT: In each specific instance, the accuracy of interchangeable assembly fits is stated in the form of a set of primary tolerances associated with the dimensions. To ensure the observance of these tolerances in production, the setting up in the planning stage of the derived tolerances for all production and inspection equipment covering all components which enter into the sub-assemblies is necessary. Further, an inspection procedure for the assembly tolerances is needed. Such a procedure, applied to the lofting template method of aircraft component production, is considered in the present paper. The inspection of the accuracy of the fit between two dimensions forming part of different production assemblies is carried out by measuring the deviations of these dimensions from the corresponding dimensions forming part

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Inspection of the Accuracy of Fit Between Aircraft Components

of the inspection equipment. The distinguishing feature of the lofting template method of production is the similar order of magnitude of the errors in the inspected components and the inspection equipment. For example, in inspecting the fit between the wing rib and the wing skin the tolerance zones of the inspection dies are of the order of 0.2 mm and those of the rib and skin assemblies themselves are of the order of 0.3 mm. Altogether, the resulting fit between rib and skin is within a zone of 1.4 mm and that between male and female inspection dies is of the order of 0.8 mm. At present, the inspection procedure uses the criteria of production tolerances for each separate component or sub-assembly. The applicability of this method under the conditions of lofting template inspection described earlier is questioned. The production tolerance method of inspection inevitably leads to the existence of "fictitious scrap" and "undiscovered scrap". The former is uneconomic, the latter dangerous. A discussion of the histograms of measuring errors leads to the

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conclusion that, in the inspection of assembly fits of aircraft sub-assemblies by the method of production tolerances, the actual fit error can exceed the fit tolerance zone by a magnitude commensurate with the fit tolerance zone itself. Further discussion of the distribution laws of the component error and the measuring error leads to a graph (Fig 5) showing the percentage of undiscovered scrap compared with the discovered scrap as a function of the ratio of the mean measuring error to the fit tolerance zone. When this ratio is unity, the undiscovered scrap percentage reaches 70%. It is concluded that a quality control procedure alone can exclude undiscovered scrap. Such a procedure is discussed in detail. It is shown that under certain conditions, characterized by certain accuracies of the fit of the inspection equipment coupled with a certain precision of measurement, the elimination of undiscovered scrap is altogether impossible. It follows that these two accuracies must have minimum values. Another factor is the choice of the dimensional chain which determines the fit of the

Inspection of the Accuracy of Fit Between Aircraft Components

inspection equipment components. This should contain the minimum number of links and so ensure the reduction in the amount of "fictitious scrap", which otherwise always increases when a quality control procedure replaces direct production tolerance procedure.
There are 6 figures and 4 Soviet references.

ASSOCIATION: Kafedra proizvodstva samoletov (Chair of Aircraft Production) Moskovskiy aviatsionnyy institut (Moscow Aeronautical Engineering)

SUBMITTED: May 16, 1958

25.1000

68938
S/147/59/000/04/015/020
E191/E481

AUTHOR: Konorov, L.A.

TITLE: Contribution to the Use in Aircraft Manufacture of the Mechanical Engineering Principle of Ensuring Interchangeability 14

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, 1959, Nr 4, pp 127-131 (USSR)

ABSTRACT: The mechanical engineering principle is the independent application of the original length standard to all production components. In aircraft manufacture, the jigging method has been mainly used by which assembly dimensions are inter-connected without reference to a common standard. Currently, the engineering method is being introduced into aircraft manufacture, to avoid the delays due to the sequence of tooling inevitable in the jigging method. The problem exists of determining conditions of changing over from one principle to the other which would ensure the same accuracy of assembly dimensions. It is shown that, with the same tolerances, the jigging method 14 yields a greater accuracy of assembly dimensions and the degree by which the

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S/147/59/000/04/015/020
E191/E481

Contribution to the Use in Aircraft Manufacture of the Mechanical Engineering Principle of Ensuring Interchangeability

accuracy is increased is related to various quantities defining individual errors or deviations. In order to obtain the same accuracy of assembly dimensions, individual tolerances have to be tightened. The amount of tightening is shown to depend on a factor defined as the ratio of squares of certain standard deviations. As a rule of thumb, half the tolerances are normally required to apply the engineering method. There are 3 figures and 1 Soviet reference.

ASSOCIATION: Kafedra proizvodstva samoletov Moskovskiy aviatsionnyy institut (Chair of Aircraft Production, Moscow Institute of Aeronautics)

SUBMITTED: April 14, 1959

Card 2/2

DERYAGIN, Georgiy Aleksandrovich; KOSHELEV, G.M., inzh., retsenzent; YEROKHIN, A.A., kand.tekhn.nauk, retsenzent; KONDRATOV, A.S., kand.tekhn.nauk; KONOROV, L.A., dotsent, kand.tekhn.nauk, red.; TOKAR', V.M., red.; GARMUKHINA, L.A., tekhn.red.

[Using technological methods for increasing the durability of machine parts] Povyshenie vynoslivosti detalei mashin tekhnologicheskimi metodami. Moskva, Gos.nauchno-tekhn.izd-vo Oborongiz, 1960. 202 p. (MIRA 13:11)
(Machine-shop practice)

KONOROV, L. A.

PHASE I BOOK EXPLOITATION SOV/3783

Andreyev, Vladimir Aleksandrovich, Vasiliy Aleksandrovich Zvorykin, Lev Andreyevich Konorov, Sergey Sergeyevich Len'kov, Sergey Timofeyevich Orlov, Vladimir Semenovich Semchukov, and Vladimir Sergeyevich Tarkhov

Raschet i postroyeniye konturov samoleta na plaze (Calculation and Construction of Aircraft Contour Lines With Templates) Moscow, Oborongiz, 1960. 490 p. Errata slip inserted. 2,200 copies printed.

Reviewer: S.S. Bekin, Engineer; Ed. (Title page): S.S. Len'kova, Candidate of Technical Sciences; Ed. (Inside book): V.I. Tikhonov, Engineer; Ed. of Publishing House: M.F. Bogomolova; Tech. Ed.: V.P. Rozhin; Managing Ed.: S.D. Krasil'nikov, Engineer.

PURPOSE: This book is intended for designers and technicians in experimental design offices, lofting shops, and production-development sections of aviation factories. It may also be used by students of schools of higher technical education and tekhnikums specializing in aircraft construction.

COVERAGE: The book examines the principles of the lofting method of aircraft construction, the application of these principles to the design of surfaces of aircraft assemblies, and the procedures for making theoretical and constructional templates.

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KONOROV, L. A.

SOV/5025

PHASE I BOOK EXPLOITATION

Zernov, Igor' Alekseyevich, and Lev Andreyevich Konorov

Teoreticheskiye osnovy tekhnologii i protsessy izgotovleniya detaley samoletov (Theoretical Basis of the Technology and Manufacturing Processes of Aircraft Parts) Moscow, Oborongiz, 1960. 631 p. Errata slip inserted. 8,000 copies printed. (Series: Tekhnologiya samoletostroyeniya)

Ed. (Title page): D. V. Golyayev, Professor; Reviewers: Khar'kov Aviation Institut and S. S. Bekin, Engineer; Ed.: A. I. Sokolov, Engineer; Ed. of Publishing House: M. F. Bogomolova; Tech. Ed.: V. I. Oreshkina; Managing Ed.: S. D. Krasil'nikov, Engineer.

PURPOSE: This textbook is intended for students at aviation institutes of higher education. It may also be used by engineers and technicians in the aviation industry.

COVERAGE: The book, the first of a 2-volume work, describes general aircraft production methods, including the interchangeability of parts, industrial productivity, production costs, mechanization,

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SOV/5025

Theoretical Basis (Cont.)

automation, and standardization. Technological processes in the production of aircraft parts by forging, casting, sheet-metal forming, and from profiles and thin-walled tubing are discussed. The book is used in the course on the theory of aircraft construction given at the Moskovskiy aviatsionnyy institut (Moscow Aviation Institute). Chs. II and VI-VIII of Part I, and Part III were written by L. A. Konorov; Chs. III-V of Part I, and Part II, by I. A. Zernov; Ch. I was written jointly by the authors. The authors thank Professor V. V. Boytsov, Docent I. T. Belyakov, and Candidate of Technical Sciences N. M. Biryukov. There are 13 references, all Soviet.

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Theoretical Basis (Cont.) SOV/5025

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SOV/5025

Theoretical Basis (Cont.)

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KONOROV, L.A.

Basic trends in the development of the technical level of the official inspection of measuring equipment. Izm. tekh. no.4: 4-11 Ap '65. (MIRA 18:7)

KONOROV, P. P.

"Investigation of the Electrical Properties of the Sulfide, Selenide, and Telluride of Bismuth." Cand Phys-Math Sci, Leningrad Order of Lenin State U imeni A. A. Zhdanov, Leningrad, 1955. (KL, No 12, Mar 55)

SO: Sum. No. 670, 29 Sep 55—Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

KONOROV, P.P.

FD - 3137

USSR/Physics - Electrical properties of CdTe

Card 1/1 Pub. 153 - 13/26

Author .: Boltaks, B. I.; Konorov, P. P.; Matveyev, O. A.

Title .: Electrical properties of cadmium telluride

Periodical: Zhur. tekh. fiz., 25, No 13 (November), 1955, 2329-2335

Abstract : The authors briefly expound experimental data obtained by them in a study of the electrical properties of cadmium telluride, this data relating mainly to the problem of the temperature dependence of electrical conductivity and thermo-emf coefficient of cadmium telluride specimens close in composition to stoichiometry and also of cadmium telluride specimens with small additions of copper, gold, cadmium, selenium, and tellurium. Part of the presented data here was already obtained by the authors as early as 1950. They thank V. P. Zhuze, head of the laboratory, and V. P. Savinov, who helped prepare the specimens. Seven references: e.g. B. T. Kolmiyets, DAN SSSR; V. Ye. Lashkarev, G. A. Fedorus, Izv. AN SSSR, 16, 1, 81, 1952; V. D. Kuznetsov, Kristally i kristallizatsiya, GITTL, Moscow, 1954.

Institution:

Submitted: June 14, 1955

KONOROV, P.P.

USSR/Electricity - Semiconductors G-3

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 7044

Author : Konorov, P.P.
Title : Electric Properties of Chalcogenides of Bismuth. I. Electric Property of Bismuth Sulfide Bi_2S_3.

Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 5, 1126-1128

Abstract : An investigation was made of the temperature dependences of the electric conductivity and thermal emf of polycrystalline pressed specimens of Bi_2S_3, which belong to the chalcogenide group, the electrical properties of which are of interest at the present time principally in connection with the possibility of using them as photoresistances that are sensitive to the infrared region of the spectrum. The usual compensation method of investigation was used. The thermal emf measured at room temperature was d = 1.3 mv/deg and corresponded in sign to the electron conductivity. No data on the conductivity in the infrared region of the spectrum are given.

Card : 1/1

Title : Electric Properties of Bismuth Chalcog... Properties of Bismuth Selenide Bi_2Se_3.

Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 7, 1394-1399

Abstract : An investigation was made of the electric conductivity, the Hall effect, and the thermal emf of the selenide Bi_2Se_3 in the temperature range from room temperature to 600 -- 700° K, and in some cases from the temperature of liquid air to 700° K. Polycrystalline pressed specimens, cast large-crystal blocks, and individual single crystals were employed. The substance was prepared by melting bismuth and selenium in evacuated ampoules. All the

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USSR/Electricity - Semiconductors

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 12209

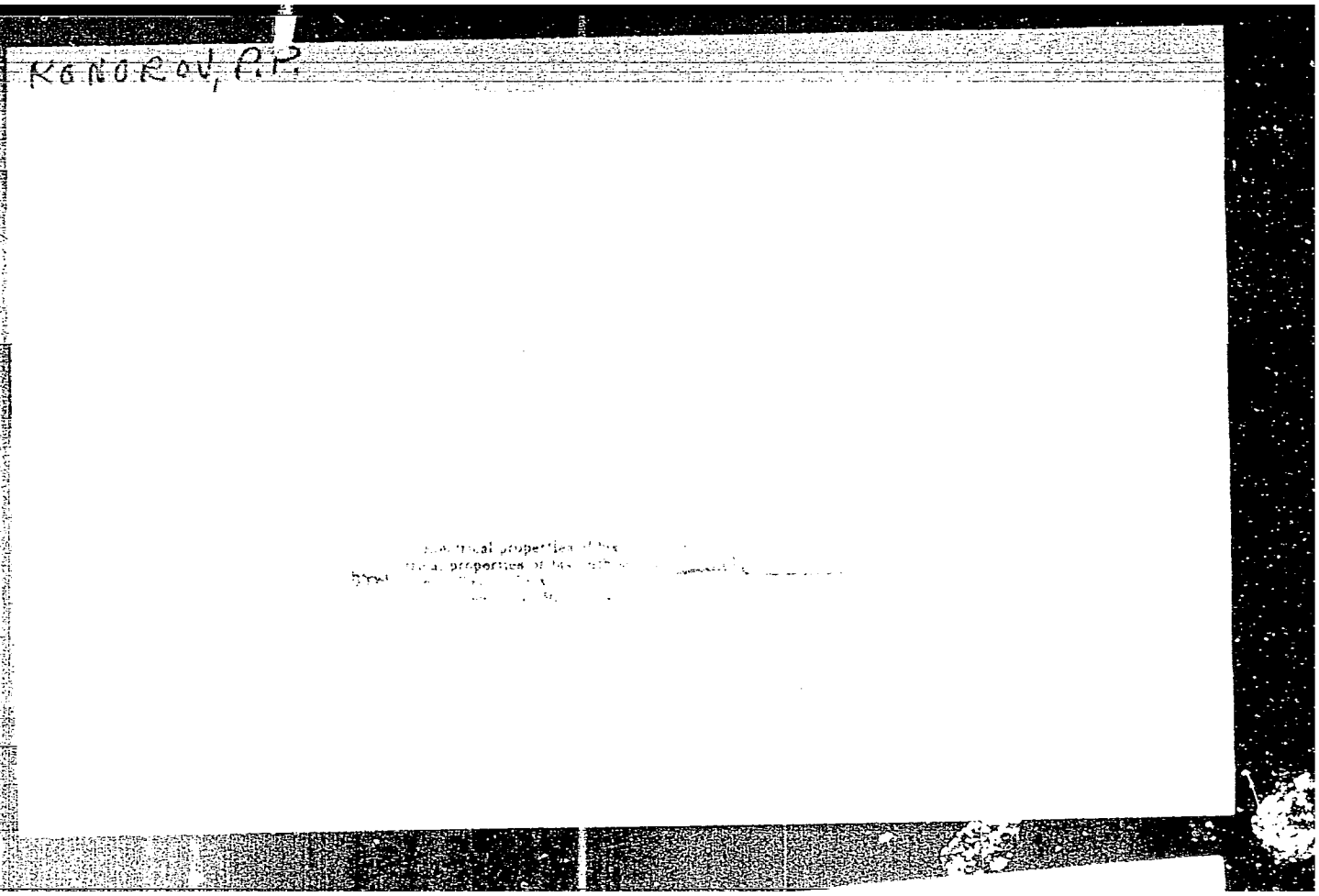
Author : Konorov, P.P.

Inst : Leningrad State University, USSR

Title : Electric Properties of Bismuth Chalcogens. III. Electric Properties of Bismuth Telluride (Bi_2Te_3).

Orig Pub : Zh. tekhn. fiziki, 1956, 26, No 7, 1400-1405

Abstract : An investigation was made of the temperature dependences of the electric conductivity (σ), the Hall effect, and ... in Bi_2Te_3 in the temperature range ... were



81629
S/181/60/002/06/17/050
B122/B063

24.7700

AUTHORS: Konorov, P. P., Shevchenko, I. B.

TITLE: Electrical Conductivity and Photoelectric Properties of Layers of Cadmium and Zinc Telluride

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 6, pp. 1134 - 1140

TEXT: The data available in publications on this subject are briefly discussed in the introduction. The present paper deals with the development of electrical conductivity and the photoelectric properties in cadmium and zinc telluride. CdTe and ZnTe layers of different thickness were prepared (by vaporization onto a glass backing), and their electrical conductivity and their change by the action of light were determined from the current passing through the samples. The spectral characteristic of photoconductivity was taken with the aid of an infrared spectrometer ИКС-11 (IKS-11) with a universal monochromator УМ-2 (UM-2). The resistivity of the samples was 10^7-10^8 ohm·cm, and did not vary with rising thickness of the samples. In samples, that had been vaporized on a hot base (350-400°C), resistivity

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dropped somewhat. The volt-ampere characteristic was nonlinear for all samples (Fig. 1), which fact is explained by the action of a space charge hindering the current passage. The dependence of resistivity on heating follows an exponential law. Studies made on the photoconductivity revealed that the latter is caused by simple electron transitions under the action of light from the filled shell into the conduction zone, and that a bimolecular recombination takes place in this connection. The developing of conductivity properties of the layers could be determined from the behavior of the samples at 350-400°C. The conductivity does not result from the action of oxygen. An increase in the mobility of conduction electrons follows from irreversible rearrangements of material structure. The CdTe layers proved to be good photoresistors with high sensitivity in the red and infrared region of the spectrum. ZnTe, on the contrary, did not prove suitable for use as photoresistor. The student A. N. Birulya of the Fizicheskiy fakul'tet LGU (Physics Department of the Leningrad State University) also participated in the work. Finally, the authors thank Academician A. A. Lebedev and Docent R. Ya. Berlaga for having revised the manuscript and for their valuable advice. There are 7 figures and 9 references: 2 Soviet, 2 German, 1 Japanese, 3 US, 1 British.

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83007

S/181/60/002/008/026/045
B006/B063

24.7700

AUTHORS: Konorov, P. P., Romanov, O. V.

TITLE: Electrical Conductivity of Sputtered Germanium Layers

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 8, pp. 1869 - 1873

TEXT: The authors of the present paper studied the conductivity, structure, and optical absorption of germanium layers that had been sputtered onto cold glass backings in vacuo. The sputtering proceeded from tungsten wire or graphitized quartz crucibles. Single crystals of p-type germanium of a resistivity of about 7 ohm.cm were used as starting material. The interferometrically measured thicknesses of the layers varied from 0.05 and 0.05 to 0.7 μ. Their conductivity was measured by a compensation method between 20 and 300°C, the structural analysis was carried out by means of an electron diffraction picture (reflection), and the spectral absorption was examined by means of an ИКС-11 (IKS-11) instrument. Electron diffraction studies showed that all layers were amorphous. The layers sputtered from graphitized quartz crucibles had a

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Electrical Conductivity of Sputtered Germanium Layers

S/181/60/002/008/026/045
B006/B063

conductivity of 10^{-4} - 10^{-5} $ohm^{-1}.cm^{-1}$ at room temperature. Figs. 1-4 show the temperature dependence of conductivity for various layers sputtered from graphitized quartz crucibles. Figs. 5 and 6 show the same function for layers sputtered from tungsten wire. The activation energy of conductivity depended on the thickness of the layers. It was about 0.5 ev for a layer 0.05 μ thick and about 0.9 ev for a thickness of 0.6 μ. The layers crystallized when they were heated to more than 120°C. Oxidation occurred when they were heated in air. The layers sputtered from graphitized quartz crucibles had other properties than those sputtered from tungsten wire. The authors assume that this difference is due to the alloying of tungsten with germanium. The tungsten is again separated from the crystals formed during crystallization. The activation energy of conductivity in the layers changes with their heat treatment and in accordance with the change in the position of the optical absorption edge (Fig. 7). The authors thank Academician A. A. Lebedev for his interest in this work. There are 7 figures and 7 references: 1 Soviet, 4 US, 1 British, and 1 German.

83007

Electrical Conductivity of Sputtered Germanium Layers

S/181/60/002/008/026/045
B006/B063

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. Zhdanova (Leningrad State University imeni Zhdanov)

SUBMITTED: January 11, 1960

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84088

S/181/60/002/009/029/036
B004/B056

9.4177

AUTHORS: Konorov, P. P., Sokolov, A. N.

TITLE: Electrical Conductivity and Photoconductivity of Lead Oxide Layers Treated With Sulfur, Selenium, and Tellurium

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 9, pp. 2240-2242

TEXT: It was the aim of the present work to check two western papers (Refs. 1,2) on the infrared sensitivity of PbO layers which had been obtained by the precipitation of PbO vapor at 10^{-4} torr onto cooled glass bases, and had been treated with sulfur vapor. The layers used by the authors had a resistivity of 10^{9} - 10^{10} ohm.cm and were insensitive to light. The temperature dependence of the conductivity of these layers at 400°C corresponded to an activation energy of 1.48 - 1.52 ev (Fig. 1). When the layers were heated to 450°C for 5-10 min in air, a distinct photosensitivity was found in the visible spectral range (Fig. 2), and the activation energy rose to 2 - 2.2 ev (Fig. 1). Either the ready PbO layers were then treated with S, Se, or Te vapor at 10^{-4} torr, or the oxide layer was sputtered onto a glass base at 10^{-4} torr in the atmosphere

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Electrical Conductivity and Photoconductivity of Lead Oxide Layers Treated With Sulfur, Selenium, and Tellurium

84088
S/181/60/002/009/029/036
B004/B056

of these vapors. The infrared sensitivity was obtained by subsequent heating to 250°C for 2 - 3 minutes in air. Both methods led to the same results. Samples treated with sulfur vapor had a resistivity of only 10^5 - 10^6 ohm.cm. The temperature dependence of conductivity between -100° and + 100°C exhibited a section with impurity conductivity (Fig. 1). The photoconductivity maximum was in the visible region of the spectrum, but besides, there was also infrared sensitivity (up to 30% of the maximum sensitivity in the visible) which extended to 2 - 2.2μ (Fig. 2). PbO samples treated with selenium vapor behaved in a similar manner, but their infrared sensitivity was lower. No noticeable infrared sensitivity was obtained by means of tellurium vapor. Resistivity remained unchanged. The large atomic diameter of tellurium prevents it from being embodied in the PbO lattice. The authors thank Academician A. A. Lebedev and Assistant L. P. Strakhov for discussions. There are 2 figures and 2 references.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

Card 2/2

23123
S/181/61/003/005/028/042
B108/B209

9,4300 (1150, 1151, 1136)

AUTHORS: Konorov, P. P. and Kolbin, M. N.

TITLE: Investigation of the change in the length of diffusion displacement of the carriers and the electrode potential of germanium during electrolytic treatment

PERIODICAL: Fizika tverdogo tela, v. 3, no. 5, 1961, 1553-1556

TEXT: The authors studied the change in diffusion displacement of the carriers and the electrode potential of germanium on anodic and cathodic polarization in various electrolytes. The samples were treated with an CP-4 (SR-4) etching agent and with H_2O_2. The experimental setup is shown in Fig. 1. The diffusion length of the carriers was measured by a light probe on the outer side of the sample. The samples used (thickness: a few tenths of a millimeter) were n-type and p-type germanium foils with a resistivity of 10 ohm.cm. Their (111) planes were exposed to the respective electrolytes (aqueous solutions of NaOH, KOH, NaCl, KCl, Na_2CO_3, and HCl). Figs. 2 and 3 show the dependence of the electrode potential φ

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Investigation of the change in ...

(in volts) (lower curves) and of the diffusion length L_D (upper curves) on the current flowing through the electrolyte for n-type and p-type germanium, respectively, for the case of an NaOH molar solution. The sharp rise of the electrode potential in n-type Ge from 10 ma/cm^2 onward is due to the fact that the kinetics of the anodic dissolution of germanium is limited by the diffusion of holes to the surface. In this range of currents, the electrochemical oxidation of the germanium surface plays a significant role. Since a change in diffusion length was observed in the case of alkaline electrolytes only, the authors conclude that the formation of a potential barrier at the boundary between germanium and electrolyte is related to the specific character of the action of the OH^- ions upon the surface of germanium. The authors thank Academician A. A. Lebedev and Professor P. L. Myuller for their interest in this study. There are 3 figures and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The reference to an English-language publication reads as follows: W. Brattain, C. Garrett. Bell. Syst. Techn. Journ., 34, 129, 1955.

23123
S/181/61/003/005/028/042
B108/B209

Investigation of the change in ...

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: November 26, 1960

Card 3/5

24892

S/109/61/006/008/012/018
D207/D304

9,4300

AUTHORS: Berlaga, R.Ya., Konorov, P.P., and Rudenok, M.I.

TITLE: Electron microscopic study of the germanium surface

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 8, 1961, 1370 - 1373

TEXT: This paper was presented at the 3rd All-Union Conference on the electron microscopy, Leningrad, October 1960. In the present article the authors present the results of electron microscopic studies of a germanium surface. The germanium samples were crystals of n and p types with intrinsic resistance of the order of a few ohm. cm., cut along the (111) axis. The study was made with the use of a type ЭМ-3 (EM-3) electron microscope, magnifying 5,500 times. The crystal samples were prepared by the three most common methods: mechanical polishing with emery powder; etching in 30 % H_2O_2; and etching in standard etching fluid CP-4 (SR-4) (50 cc HNO_3, 30 cc

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Electron microscopic study ...

CH_3COOH, 30 cc HF and 0.6 cc Br). The diffusion length of samples treated by SR-4 was 0.08-0.1 and 0.3 mm. When etched with hydrogen peroxide the surface structure varied according to whether the etching had been done directly after polishing or after treatment with SR-4. The diffusion length after H_2O_2 etching was found to be 0.22 mm and independent of previous treatment. The action of the separate components of SR-4 was investigated, namely HNO_3 and HF. Prior to treatment with HF germanium was either polished or etched in SR-4. In treatment with HF it was found that in each case both the surface structure and the diffusion length remained unchanged. When treated with 63 % HNO_3 for 20 minutes, after being first etched with SR-4, the surface was found to be non-uniform, which is thought to be due to formation of an uneven film of the hexagonal modification of germanium dioxide. When the germanium surface was treated with SR-4 first and then with HNO_3, a large spread from 0.07 to 0.2 mm in the diffusion length of current carried was ob-

served. This decrease, compared with the lengths in the standard SR-4 treatment is thought to be due to the formation of an oxide surface layer with subsequent irregularities formed by it at the surface. In conclusion results of preliminary studies of a germanium surface are given when treated with special etching fluids: etching fluid No. 8 (20 cc HNO_3 and 10 cc HF) which reduces to a minimum the oxide formation and dissolves the dioxide; and etching fluid No. 5 (40 cc HF, 6 cc H_2O_2 with 24 cc H_2O), used to obtain a layer of monoxide at the surface. For No. 8 the state of the surface and diffusion length differed little from that obtained with SR-4 etching. After No. 5 treatment a more or less even layer of oxide is formed with the diffusion length increased to 0.5 - 0.7mm. There are 5 figures.

SUBMITTED: February 7, 1961

S/181/62/004/006/042/051
B108/B138

AUTHORS: Konorov, P. P., and Romanov, O. V.

TITLE: Changes in surface electrical properties of germanium on etched in hydrogen peroxide

PERIODICAL: Fizika tverdogo tela, v. 4, no. 6, 1962, 1655-1659

TEXT: The surface recombination rate and the surface electrode potential of thin germanium sections were studied while etching one face with 30% H_2O_2 at room temperature. The carrier diffusion length was measured on the dry side of the specimens. In addition, the effect of polarization on the character of the etching process and the effect of after-treatment on the surface properties of Ge were studied. The results obtained agree qualitatively with those of other investigations (A. V. Rzhanov et al. ZhTF, 26, 2142, 1956). There are 3 figures.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: December 15, 1961 (initially)
February 23, 1962 (after revision)
Card 1/1

32988

S/181/62/004/008/037/041
B108/B102

24.7700

AUTHORS: Romanov, O. V., and Konorov, P. P.

TITLE: Some phenomena in anode etching of germanium

PERIODICAL: Fizika tverdogo tela, v. 4, no. 8, 1962, 2276 - 2278

TEXT: Anode etching of n-type and p-type germanium in aqueous solutions of 0.1 N and 0.01 N KOH and NaOH after treatment in boiling 30-% H_2O_2 was investigated. Only one side of the thin specimens was etched, the current density was 1 - 4 ma/cm^2. n-type specimens, when illuminated with a pattern or when a pattern was engraved on the dry side, showed the same pattern on the opposite side after etching. This phenomenon was not observed with p-type specimens. The greater etching rate along the pattern contours in the case of illumination is due to the production of holes which diffuse through the specimen to the side of etching. A similar explanation is given for the engraved patterns. The etching rate on the side opposite the engraved pattern is greater along the contours of the patterns because the surface of the grooves of the pattern is a source of holes. This is

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Some phenomena ...

because a p-type inversion layer arises on the groove surface. This phenomenon may be used in detecting inversion layers. There is 1 figure.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: April 11, 1962

Card 2/2

BERLAGA, R.Ya.; BOL'SHAKOV, L.P.; KONOROV, P.P.; RUDENOK, M.I.

Structure of and recombination on a thermally oxidized germanium surface. Fiz. tver. tela 5 no.10:2990-2996 O '63. (MIRA 16:11)

1. Leningradskiy gosudarstvenny universitet.

KONOROV, P.P.; ROMANOV, O.V.

Physical properties of germanium surfaces in nitric acid solutions of different concentration. Fiz. tver. tela 5 no.10: 3039-3041 O '63. (MIRA 16:11)

1. Leningradskiy gosudarstvenny universitet.

ACCESSION NR: AP4004848 S/0181/63/005/012/3435/3438

AUTHORS: Berlaga, R. Ya.; Vinokurov, I. V.; Konorov, P. P.

TITLE: Electrical properties of PbS monocrystalline and polycrystalline layers

SOURCE: Fizika tverdogo tela, v. 5, no. 12, 1963, 3435-3438

TOPIC TAGS: lead sulfide, monocrystalline lead sulfide, polycrystalline lead sulfide, monocrystal, lead sulfide layer, polycrystal, electric property, single crystal

ABSTRACT: The authors studied electrical conductivities, Hall effects, and the thermoelectromotive force of polycrystalline and monocrystalline layers of PbS in order to determine the effect of crystalline interlayers and potential barriers on these properties. The PbS samples were activated by being heated at 600C in air for several minutes. The monocrystalline layers did not acquire any appreciable photosensitivity after heating. Their conductivity sign (determined from the sign of thermoelectromotive force) corresponded to p-type conductivity for some layers and to n-type conductivity for other layers. The polycrystalline layers always had n-conductivity before the sensitization and underwent a partial change to the p-conductivity after sensitization. It was established that in the activated

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ACCESSION NR: AP4004848

polycrystalline layers the Hall emf was determined by the barriers between the grains in the layer and the thermo-emf corresponded to the properties of grain volumes. This was attributed to the fact that the Hall effect was caused by continuous current through the sample, while the thermo-emf was caused by the diffusion of current carriers in separate crystals. Exponential growth of conductivity with the increase in temperature was observed in the activated polycrystalline layers. The strength of potential barriers was 0.12 - 0.14 ev. "In conclusion we express our appreciation to T. T. By*kova, L. P. Strakhov and O. M. Artamonov for useful discussions." Orig. art. has: 1 table.

ASSOCIATION: Leningradskiy gosudarstvenny*y universitet (Leningrad State University)

SUBMITTED: 20Jun63 DATE ACQ: 03Jan64 ENCL: 00

SUB CODE: PH NO SOV REF: 001 OTHER: 005

Card 2/2

ACCESSION NR: AP4011739 S/0181/64/006/001/0071/0075

AUTHORS: Konorov, P. P.; Lyubitts, K.

TITLE: The photoelectromotive force in polycrystalline layers of germanium

SOURCE: Fizika tverdogo tela, v. 6, no. 1, 1964, 71-75

TOPIC TAGS: photoelectric emf, photoelectromotive force, polycrystalline, polycrystalline germanium, oblique sputtering, adsorption desorption process, sputtering, sputtering angle

ABSTRACT: The authors investigated the photoelectromotive force in polycrystalline layers of Ge obtained by oblique sputtering on a heated base in a vacuum. Layers were obtained possessing a photoelectromotive force ranging up to 20 v at room temperature and up to 700 v at -150C on films 1 cm long. The authors investigated the dependence of the photoelectromotive force on sputtering angle, on the rate of sputtering and the temperature of the base, on the temperature of the film, on the degree of vacuum, on the intensity of illumination, and on the spectral distribution of the emf. Absence of any correspondence between magnitude or sign of photoelectromotive force and the body characteristics of the layer, such as

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ACCESSION NR: AP4011739

resistance, sign of thermoelectromotive force, and structure, as well as experiments on the photoelectromotive force when heating the layers in air and when changing the environing pressure, indicates that the photoelectromotive force in these layers of Ge is a surface feature. The reversibility of changes in this emf, observed when changing the pressure, indicates that the origin of the emf is to a certain degree associated with adsorption-desorption processes on the surface of the layer. The existence of two types of layers, differing in sign and behavior of the photoelectromotive force, supports the view of two concurrent causes producing the effect. The investigations show that the ratio between the positive and negative emf changes with temperature, and at low temperatures one sign always predominates. "In conclusion, we express sincere thanks to academician A. A. Lebedev for his interest in the work, to T. M. Zimkina for making the electron-diffraction studies, and to F. T. Novik for valuable discussions." Orig. art. has: 5 figures and 1 table.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: 05Jul63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: PH NO REF SOV: 006 OTHER: 005

Card 2/2

L 16572-65 EWT(l)/EWT(m)/T/EWP(t)/EEC(b)-2/EWP(b) ESD(ge)/ESD(t)/ESD(dp)/ JSD/AFWL/ASD(a)-5/AS(mp)-2/IJP(c) JD

ACCESSION NR: AP5000285 S/0070/64/009/006/0799/0806

AUTHORS: Rumsh, M. A.; Lyubitts, K.; Konorov, P. P.

TITLE: Interpretation of electron diffraction patterns of multiply twinned crystals

SOURCE: Kristallografiya, v. 9, no. 6, 1964, 799-806

TOPIC TAGS: germanium, thin film, epitaxial growing, twinning, electron diffraction

ABSTRACT: Although the structure of germanium films epitaxially grown on the (111) plane of fluorite has been the subject of extensive study, no detailed interpretation of the electron diffraction patterns of such films, which are extensively used in semiconductor electronics, has been made before. The authors therefore studied the patterns of germanium layers sputtered on naturally cleaved fluorite heated to 600C in vacuum of 5 x 10^{-5} mm Hg. The films were then

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transferred to an electronograph and examined in vertical transmission. The structural analysis has shown the presence of a complex twin structure of the film wherein primary and secondary growth twins are produced during the growth process, besides the twin orientations which appear during the start of the film growth. The relative numbers of nuclei crystallized in the two possible twin orientations are determined from the intensity of the reflections of the secondary twins. A method is proposed for predicting the location of the reflections due to the primary and secondary twins, and for determining their indices. The electron diffraction pattern shows also that the occurrence of multiple orientations as a result of twinning during the growth terminates with the stage of secondary twinning, since the very small dimensions of the latter make the appearance of tertiary twins physically impossible. The complicated twin structure of such films is apparently the reason for the high concentration of defects responsible for the low mobility and high concentration of the holes, regardless of the type of conductivity

L 16572-65
ACCESSION NR: AP5000285

of the initial material. "The authors thank A. A. Lebedev for interest in the work and for a discussion." Orig. art. has: 4 figures, 2 formulas, and 6 tables.

ASSOCIATION: None

SUBMITTED: 06Jan64 ENCL: 00

SUB CODE: SS,NP NR REF SOV: 06Jan64 OTHER: 007

Card 3/3

EWT(m)/EWP(i)/EWP(t)/EWP(b) IJP(c)

ACCESSION NR: AP5017099 UR/0054/65/000/002/0052/0059

AUTHOR: Rumsh, M. A.; Komarov, P. P.; Lyubitts, K.

TITLE: Structure of epitaxial layers of germanium vacuum-deposited on orienting

SOURCE: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 2, 1965,

TOPIC TAGS: epitaxial layer, quasimonocrystalline germanium, vacuum deposition, ... orientation, orienting substrate, nucleation twin, electronographic struc- ... concentration

ABSTRACT: So far the causes of the twinning orientation found to be present in ...alline germanium layers vacuum-deposited on crystal substrates have not ... Orientation of this kind is accompanied by ... concentration of ... in layers of this type. ... interest currently shown in the ... germanium, the authors performed a detailed analysis ... with the object of uncovering the possible mechanism of twinning and the de-

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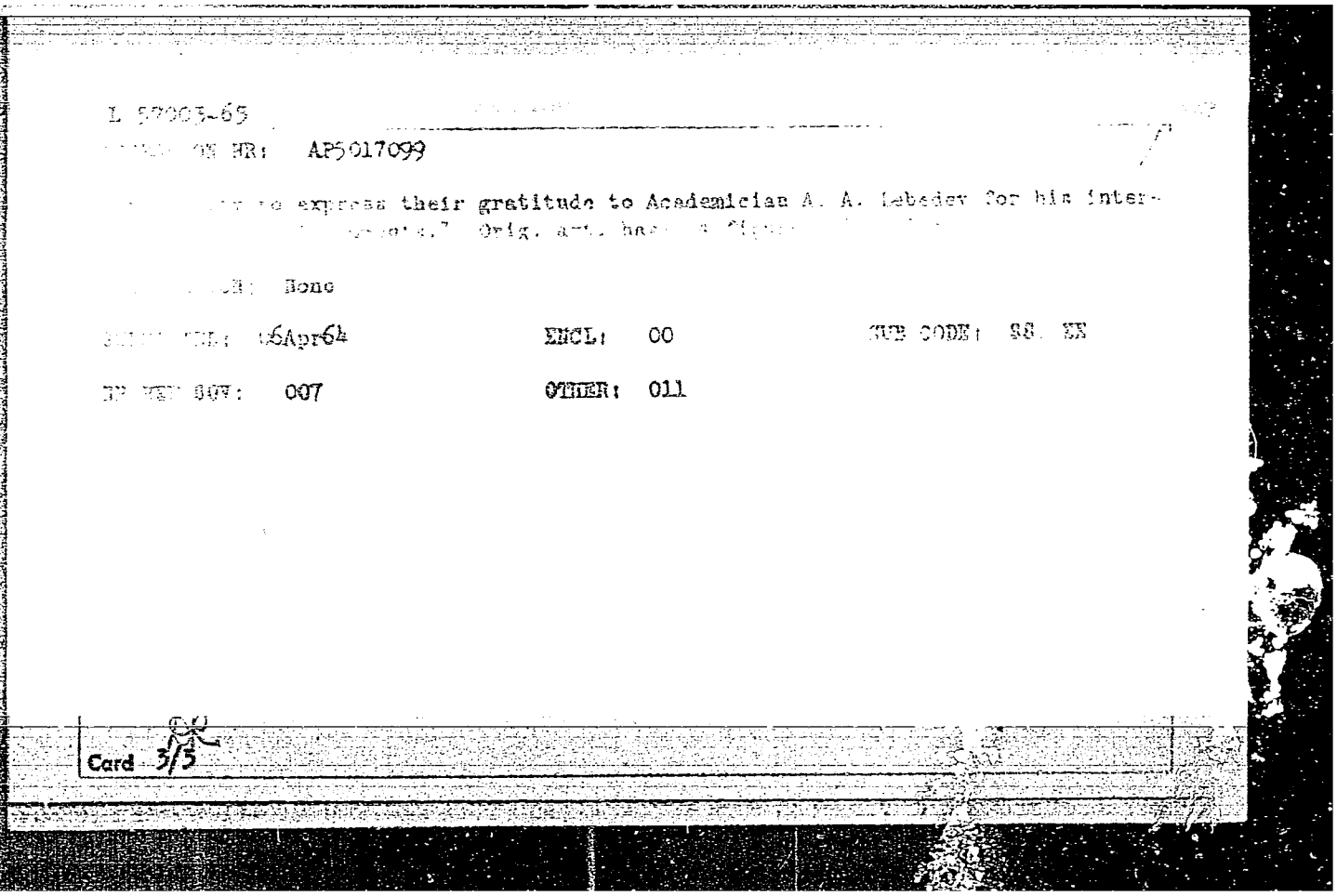
gree of their development. "Mononcrystalline" layers of germanium were obtained by deposition on chips of natural fluorite, the latter having a temperature of [illegible] in the presence of a pressure of 5x10⁻⁵ mm Hg. The layers of germanium [illegible] separated from the substrate by a HCl solution and collected on a mesh [illegible] to a detailed electronographic examination. This examination revealed the layers to have a quasimonocrystalline structure which involves the appearance of twinning (nucleation twins) and a large number of defects in the junction [illegible]. As a result of the twinning there appear two orientations of primary [illegible] orientations of secondary twins. Each of the two primary twins physically adjoins over the lattice planes only one nucleation twin and three secondary twins, while the secondary twins themselves normally adjoin only one primary [illegible]. This indicates that in the process of formation of the Ge layer, owing [illegible] twinning, defects must appear in the boundary regions of the twin [illegible] and these defects may be present in [illegible] similar to those [illegible] layers. [illegible] obtain layers [illegible] the techniques for their preparation [illegible] temperature of [illegible] so as to eliminate [illegible]



L 57003-65

[illegible] NR: AP5017099

[illegible] to express their gratitude to Academician A. A. Lebedev for his inter- [illegible] Orig. art. has [illegible]

[illegible]: None

[illegible] TED: 06Apr64 ENCL: 00 SUB CODE: GS, EE

NR REF SOV: 007 OTHER: 011

Card 3/3

KONOROV, P.P.; ROMANOV, O.V.

Volt-ampere characteristics of surface barriers in germanium at the interface with electrolytes. Vest.LGU 20 no.22:65-70 '65. (MIRA 18:12)

L 18828-66 EWT(m)/ETC(f)/EWG(m)/T/EWP(t) IJP(c) DS/JD
ACC NR: AP6002347 SOURCE CODE: UR/0054/65/000/004/0065/0070

AUTHOR: Konorov, P. P.; Romanov, O. V.

ORG: none

TITLE: Volt-ampere characteristics of surface barriers in germanium at electrolyte boundaries

SOURCE: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 4, 1965, 65-70

TOPIC TAGS: volt ampere characteristic, metal surface, electrolyte, germanium, current density, voltage potential, light polarization, illumination

ABSTRACT: The volt-ampere characteristics of germanium surface barriers at Na_2SO_4 and H_2SO_4 solution boundaries were studied under static and dynamic test conditions. The test apparatus which made use of calomel and platinum electrodes, is shown in block diagrams. A curve was given of voltage as a function of current density ($\mu a/cm^2$) for n-Ge, having its (110) surface in contact with a 1 N Na_2SO_4 solution.

UDC: 537.311.33

Card 1/2

L 00449-67 EWT(m)/EWP(t)/ETI IJP(c) JD/WB

ACC NR: AP6026730 SOURCE CODE: UR/0181/66/008/008/2517/2519

AUTHOR: Konorov, P. P.; Romanov, O. V.; Kareva, G. G.

ORG: Leningrad State University im. A. A. Zhdanov (Leningradskiy gosudarstvennyy universitet)

TITLE: Study of surface states arising in the course of oxidation of germanium

SOURCE: Fizika tverdogo tela, v. 8, no. 8, 1966, 2517-2519

TOPIC TAGS: germanium compound, surface property, recombination

ABSTRACT: The possibility of obtaining various stages of oxidation of Ge directly in HNO_3 solutions by changing their concentration has permitted the use of new methods for studying the characteristics of surface states responsible for the change in the surface recombination rate S in the course of the oxidation. One such method used in the present study was that of the field effect in electrolytes; it involved measurement of the surface capacity and conductivity of Ge in HNO_3 solutions of various concentrations as functions of the electrode potential of Ge measured relative to a saturated calomel electrode and reflecting changes in the surface potential of Ge in the course of its polarization. The study of the dependences of the surface capacity of n- and p-Ge on the electrode potential in HNO_3 solutions showed that at HNO_3 concentrations below 3-4 N these dependences have curves with a minimum which are characteristic of the capacity of the space charge region in Ge, indicating the absence of a

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ACC NR: AP6026730

significant quantity of surface states ($N_t < 4 \times 10^{10}$ cm^{-2}) in this range of HNO_3 concentration. At 6 N, there is a single local surface level with a concentration of surface states of $\sim 5.0 \times 10^{12}$ cm^{-2}. It is shown that the start of formation of the oxide phase on the Ge surface and the appearance of individual crystals of hexagonal GeO_2 are associated with the appearance of a local level of fast surface recombination states with energy $E_t - E_i \sim 3.5$ kT and with concentration $N_t \sim 5\text{-}6 \times 10^{12}$ cm^{-2} which decreases with progressing formation of the uniform oxide coating. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 03Jan66/ ORIG REF: 003

Card 2/2

L 06260-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JD/AT

ACC NR: AP6030981 SOURCE CODE: UR/0181/66/008/009/2804/2805

AUTHOR: Konorov, P. P.; Romanov, O. G.

41
B

ORG: Leningrad State University im. A. A. Zhdanov (Leningradskiy gosudarstvennyy universitet)

TITLE: Effect of surface barriers on the photoconductivity of germanium

SOURCE: Fizika tverdogo tela, v. 8, no. 9, 1966, 2804-2805

TOPIC TAGS: photoconductivity, germanium single crystal

ABSTRACT: The paper reports on a study of the effect of surface barriers on the magnitude and kinetics of photoconductivity of thin (~0.2-0.3 mm) samples of n-Ge ($\rho \sim 2$ ohm cm) cut out along the (111) plane and placed on one side in contact with an electrolyte (0.1 N aqueous Na_2SO_4). The barrier height on the surface in contact with the electrolyte was measured through its polarization relative to an auxiliary platinum electrode. The photoconductivity was measured between ohmic contacts placed on the dry side of the sample. All the measurements were carried out at room temperature. It was shown that as the barrier height increases, the photoconductivity passes through a maximum associated with the maximum carrier lifetime. If the sample is illuminated with perpendicular light pulses on the dry side, a change in the kinetics of photoconductivity takes place with increasing barrier height. This change is attributed to the existence on the surface of unpolarized Ge of recombination-type sur-

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L 06260-67

ACC NR: AP6030981

face levels which produce rapid relaxation. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 05Apr66/ ORIG REF: 003

Card 2/2 egh

KONOROV, Yu.V.

Production of fruit juices in France (from "Revue de la Conserve [France]", no.3, 1961). Kons.i ov.prom. 17 no.9:40-42 S '62. (MIRA 15:8)

(France--Fruit juice)

KONOROV, Yu.V.

Storage of fruit juices in the nitrogen atmosphere. Kons. i ov.prom. 18 no.9:41-42 S '63. (MIRA 16:9)
(Fruit juices--Storage)

KONOROV, Yu.V.; NAMESTNIKOV, A.F.

From the pages of foreign journals. Kons.i ov.prom. 18 no.5: 38-41 My '63. (MIRA 16:4)
(Canning industry)

KONOROV, Yu.V.

Screw pump of the RSM type with rubber starter. Kons. i ov.prom. 18 no.3:37-38 Mr '63. (MIRA 16:3)
(Pumping machinery)

KONOROV, Yu.V.

Improved technology for the preparation of powdered condiments.
Kons. i ov.prom. 19 no.1:42 Ja '64. (MIRA 17:2)

KONOROVA,E.V.

25300 KONOROVA, E.V. Ritmika Kak Lechebnyy Faktor V Rabote S Nervno-Bol'nymi Det'mi. Sbornik Nauch. Rabot Psikhiatr. Bol'nitsy Im. Kashchenko, No. 6, 1949, S. 202-10

SO: Letopis' No. 33, 1949

KONOVA, I.V.; LISENKOVA, L.L.; KALMYKOVA, G.Ya.; ULEZLO, I.V.

Production of vitamin B_{12} by means of Act. olivaceus on some industrial waste products. Mikrobiologiia 33 no.3:528-532 My-Je '64. (MIRA 18:12)

1. Institut mikrobiologii AN SSSR. Submitted May 22, 1963.

SOV/112-58-2-1846

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1958, Nr 2, p 8 (USSR)

AUTHOR: Konorova, Ye. A.

TITLE: On the Problem of Statistical Delay in Breakdown of Solid Dielectrics (K voprosu o statisticheskom zapazdyvanii proboya tverdykh dielektrikov)

PERIODICAL: Izv. Tomskogo politekhn. in-ta, 1956, Vol 91, pp 73-77

ABSTRACT: On the basis of Seitz' theory, it is pointed out that dependence of electric strength of solid dielectrics on the duration of voltage application should be most pronounced in thin samples. Statistical delay was determined experimentally in muscovite mica (2-10 microns thick) and in glass (4-5 microns thick). With voltage applied for 5×10^{-8} - 5×10^{-6} sec, the electric strength is independent of time. For 5×10^{-6} sec pulses, the electric strength of glass decreases with an increase in thickness. Because of contradictory data by various authors, the problem of statistical delay in solid dielectrics cannot be considered as solved; it is suggested that cathode emission and space charge influence be taken into consideration. Bibliography: 3 items. Fizich. in-t im. P.N. Lebedeva AN SSSR (Institute of Physics imeni P.N. Lebedev, AS USSR), Moscow.

Card 1/1

A.A.V.

KONOROVA, E. A.

PA - 2072

AUTHOR: KONOROVA, E.A., SOROKINA, L.A.

TITLE: Dependence of Electrical Strength of Alkali Halide Crystals on Temperature. (Zavisimost elektriceskoj procnosti ot temperatury kristallov KBr i KCl, Russian).

PERIODICAL: Zhurnal Eksperimental'noi i Teoret. Fiziki, 1957, Vol 32, Nr 1, pp 143-144 (U.S.S.R.)

Received: 3 / 1957 Reviewed: 4 / 1957

ABSTRACT: The authors investigated this dependence for KBr and KCl in the temperature interval of from -170° to + 200° C in order to precise the existing experimental data. The investigation ensued at parallel voltage and at impulses of 10^{-4} and 10^{-6} sec with linearly increasing voltage. The amplitudes of the pulses lasting 10^{-4} and 10^{-6} sec were registered by means of a high voltage cathode oscillograph KO-20; measuring errors were less than 10%. The samples used for the investigation of the breakdown were produced from KBr- and KCl-crystals (which were bred according to KIRO-PULO'S method). The thermal and mechanical treatment of the samples is described.
A diagram shows the here received temperature dependences of E_{pr} (the significance of E_{pr} is not given, probably it denotes breakdown field strength) for KBr. In this temperature depend-

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PA - 2072

Dependence of Electrical Strength of Alkali Halide Crystals on Temperature.

The amount of the electronic space charge apparently depends on the emission velocity of electrons (from the cathode) and thus also on the following circumstances: on the one hand on the material of the cathode and on the state of the contact surface, and on the other on the concentration of electron traps in the crystal, i.e. on the degree of contamination of the crystal, on the preceding thermal treatment etc.

ASSOCIATION: Physical Institute "P.N.LEBEDEV" of the Academy of Sciences of the USSR

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress

Card 3/3

KONOROVA, Ye.A.

G-2

USSR/Electricity - Dielectrics

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1247

Author : Konorova, Ye.A.

Inst : Physics Institute, Academy of Sciences, USSR.

Title : Statistical Delay in Electric Breakdown of Solid Dielectrics.

Orig Pub : Zh. eksperim. i teor. fiziki, 1957, 32, No 3, 603-604

Abstract : A measurement was made of the breakdown voltage (E_b) as a function of the time of application of the voltage and of the thickness of specimens of mica-muscovite (from 2 to 10 microns) in glass having a composition: SiO_2 68%, B_2O_3 20%, Al_2O_3 3%, Na_2 04%, K_2 05%, As_2O_3 0.25% (from 3 to 10 microns). The voltage was increased linearly during a time from 10^{-2} to 5×10^{-8} seconds. The dependence of E_{br} on the thickness was plotted for

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KONOROVA, Ye. A.

Konorova, Ye. A. and Sorokina, L.A. [Fizicheskiy institut imeni P.N. Lebedeva AN SSSR (Physical Institute imeni P.N. Lebedev AS USSR)] Temperature Dependency of the Electrical Stability of Alkaline-Haloid Crystals KBr and KCl

Krasnopevtsev, V. V., G. I. Skanavi, and Ye. A. Konorova, "Temperature Dependency of the Pulse Electrical Stability of Several Polycrystalline Dielectrics."

(The Physics of Dielectrics; Transactions of the All-Union Conference on the Physics of Dielectrics) Moscow, Izd-vo AN SSSR, 1958. 245 p. 3,000 copies printed.

This volume publishes reports presented at the All-Union Conference on the Physics of Dielectrics, held in Dnepropetrovsk in August 1956 sponsored by the "Physics of Dielectrics" Laboratory of the Fizicheskiy institut imeni Lebedeva AN SSSR (Physics Institute imeni Lebedev of the AS USSR), and the Electrophysics Department of the Dnepropetrovskiy gosudarstvennyy universitet (Dnepropetrovsk State University).

SOV/120-58-4-14/30

AUTHORS: Konorova, Ye. A. and Lebedev, D. G.

TITLE: Measurement of the Conductance Currents in Dielectrics by Pulse Voltages (Izmereniye tokov provodimosti v dielektrikakh na impul'snykh napryazheniyakh)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Nr 4, pp 68-71 (USSR)

ABSTRACT: The circuit shown in Fig. 1 was used in making the measurements. The principal unit of this circuit is a symmetrical bridge, whose one arm contains a standard condenser of variable capacitance C_1, without losses, while the second arm contains the sample to be measured C_2. If the sample is represented by equivalent circuit such as shown in Fig 2 and if the input pulse to the bridge is in the form of a linearly rising waveform such that $U = at$, the potential difference between the points a and b is expressed by:

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Measurement of the Conductance Currents in Dielectrics by Pulse Voltages

$$U_{ab}(t) = \frac{R_1}{r + R_1} + aR_1C_1 \; X$$

$$X \frac{r^2}{(r + R_1)^2} \left[1 - \exp\left(- \frac{r + R_1}{rR_1C_1} t\right)\right] -$$

$$- aR_2C_2 \left[1 - \exp\left(- \frac{t}{R_2C_2}\right)\right] \quad . \qquad (1)$$

Since R_1 and $R_2 \ll r$, Eq (1) can be simplified and written in the form of Eq (2). If the time constants R_1C_1 and R_2C_2 are equal, the potential difference between the points a and b is proportional to the conductance current

Measurement of the Conductance Currents in Dielectrics by Means of Pulse Voltages

of the sample. This potential difference is measured by the input tube of the circuit of Fig 1. In some measurements it is necessary to take into account the parasitic capacitances of the system. In this case the voltage between the points a and b can be expressed by Eq.(4), where C_{p_1} and C_{p_2} are the parasitic capacitances of the input tube and the circuit. When used in making the actual measurements, the bridge was fed with periodic pulses, having a duration of 50-250 μs and an amplitude up to 10 kV. The output voltage from the final tube of the amplifier was observed on an oscillograph. The resulting waveforms are shown in Figs 3, 6 and 7. The oscillograph could be calibrated to measure the current directly. The resulting calibration curve is shown in Fig 5. The authors express

Measurement of the Conductance Currents in Dielectrics by Means of Pulse Voltages

their gratitude to S. I. Skanavi for his interest in this work. There are 7 figures.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute im. P. N. Lebedev, Soviet Academy of Sciences)

SUBMITTED: October 14, 1957.

KONOROVA, Ye. A.

AUTHORS: Konorova, Ye. A., Sorokina, L. A. 48-22-4-9/24

TITLE: The Dependence of Dielectric Strength of the Alkali-Halide Crystals KBr and KCl on Temperature (Zavisimost' elektricheskoy prochnosty shchelochno-galoidnykh kristallov KBr i KCl ot temperatury)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1958, Vol. 22, Nr 4, pp. 401-403 (USSR)

ABSTRACT: The authors determined by experiments, that the temperature dependence of E_{pr} in alkali-halide crystals on the constant voltage possesses a maximum. Modern theories of electric breakdown (references 8 to 10) are bringing into connection the disturbance of dielectric strength with impact ionization by means of electrons. For this reason a weak increase of dielectric strength with temperature must necessarily be observed in the entire temperature interval and independent from the duration of voltage application (at least with pulses of 10^{-6} sec). In the "high-temperature" theory of breakdown by Frelikh (ref. 11) it is attempted to explain the occurrence of a maximum according to the dependence of E_{pr} on temperature. Notwithstanding this circumstance it is

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not possible to explain from the viewpoint of this theory the fact, that the maximum occurring at a constant voltage with pulses of a duration of 10^{-6} sec is completely missing. The here obtained dependences verify, that the occurrence of maxima is connected with involved processes proceeding in the dielectric on an application of field. For this reason the hypothesis proposed by Khippel' and Aldzher (ref. 4) can be applied for the explanation of the obtained results. According to this hypothesis the reduction of the breakdown strength is caused by the distortion of the field because of the formation of space charges: that is to say, of a negative (electron) charge at low temperatures, caused by the cold emission of the cathode, and of a positive (ion) charge at high temperatures, caused by the conductivity of the crystal. It is possible that at some temperatures both charges compensate in such a way, that the field remains comparatively undistorted, and that the breakdown strength reaches a maximum. The increased strength at a reduced application of voltage at high temperatures proves, that for the formation of an ion charge a period exceeding 10^{-6} sec is needed. The magnitude of the space charge of the electrons is apparently

dependent upon the emission velocity of the electrons from the cathode. This implies a dependence upon the cathode material and upon the state of the contact surface on the one hand, and on the concentration of the electron traps on the other, that is to say, upon the degree of impurification of the crystal, on the previous thermal treatment etc. Because of the fact, that it is exceedingly difficult for different researchers to establish identical experimental conditions, certain deviations in the results must necessarily be taken into account (in particular a shift of the maximum). Final conclusions on the dependence of E_{pr} in the electric breakdown can apparently be drawn on the basis of an investigation of the nature of the currents in the range of pre-disruptive fields. This investigation was performed under the direction of G. I. Skanavi, to whom the authors express their gratitude. There are 3 figures and 11 references, 1 of which is Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics imeni P. N. Lebedev, AS USSR)

The Dependence of Dielectric Strength of the Alkali-Halide Crystals KBr and KCl on Temperature 48-22-4-9/24

AVAILABLE: Library of Congress

1. Alkali metal halide crystals---Dielectric properties
2. Dielectric properties--Temperature factors

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KONOROVA, YE. A.

AUTHORS: Konorova, Ye. A., Krasnopevtsev, V. V., Skanavi, G. I. 48-22-4-11/24

TITLE: On the Temperature Dependence of the Pulsed Dielectric Strength of Some Polycrystalline Dielectrics (K temperaturnoy zavisimosti impul'snoy elektricheskoy prochnosti nekotorykh polikristallicheskikh dielektrikov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1958, Vol. 22, Nr 4, pp. 408-413 (USSR)

ABSTRACT: In modern theories of electric breakdown of solid dielectrics it is supposed in accordance with experiments that the breakdown is conditioned by the behaviour of the conduction electrons in the crystal lattice under the influence of a strong electric field. New dielectrics were recently synthesized by the authors in their laboratory (strontium-bismuth-titanates - SBT) with an high dielectric permeability ($\varepsilon \approx 800$ at room temperature), showing no piezoelectric properties. The temperature dependence of ε in SBT is represented in figure 1, ε is independent from the electric field strength. For this reason, this dielectric possesses properties, which are necessary for an investigation of the

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APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000824320013-8"

influence of ε on the breakdown strength (ref. 7). In this connection, the temperature dependence of E_{br} was investigated in this paper in the field of electric breakdown in various dielectrics with different dielectric permeability. This were dielectrics of different polarization character, different ε and a temperature dependence of ε, being represented by titanates of zinc ZnO TiO_2 (ε =30), of calcium $CaTiO_3$ (ε =130), of barium $BaTiO_3$ (ε =1000) and by SBT (ε =800). (The value of ε is referred to room temperature at a frequency of 1 kc). The maximal errors in the determination did not exceed 12%. Mean and maximum values for Zn, Ca and Ba titanates and for SBT are given on a table. The dielectric strength of the investigated polycrystalline dielectrics does not change with the duration of voltage application at room temperature (figure 2). A certain correlation exists between the temperature dependence of ε and the breakdown voltage (figures 3 and 1). A higher breakdown voltage corresponds to smaller values of ε, although the temperature minimum of E_{br} and the maximum of ε do not coincide. The dielectric strength of $CaTiO_3$ and $BaTiO_3$ is practically independent from temperature

(figure 4). The examinations of the theory of electric breakdown in solid dielectrics proceed from the conception of impact ionization by electrons in a medium electric field. The disturbance of electron distribution is a consequence of the avalanche-like accumulation of conduction electrons in the crystal lattice. The interrelation between electric disruption and the polarization effect (frequency, effective ionic charge) can be caused by energetical losses of the conduction electrons on lattice vibrations. The effects of polarization on the magnitude of dielectric strength of the dielectric must be caused by the energetical losses of the electrons on the vibrations of the basic lattice ions (atoms) as well as of the ions causing a polarization accompanied by an high dielectric permeability. Moreover a strongly effective field is in a position to modify the frequency of the basic ions into either direction, which will show in the energy losses of the conduction electrons. From this viewpoint it proves to be extremely difficult to obtain an analytical representation of the dependence of dielectric strength on dielectric permeability and makes necessary special investigations

On the Temperature Dependence of the Pulsed Dielectric Strength of Some Polycrystalline Dielectrics 48-22-4-11/24

The representation of the interrelations between dielectric strength and dielectric permeability must be examined and proved with pure monocrystals. The authors performed experiments with polycrystalline samples. For this reason the here investigated dependence is rendered more complicated by secondary effects, as caused by macroscopic heterogeneity of the substance (crystallites, vitreous layers, pores etc.). A final answer as to the nature of the temperature dependence of dielectric strength on dielectric permeability can presumably be achieved by means of experiments with monocrystals. There are 6 figures, 1 table, and 11 references, 7 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics imeni P. N. Lebedev, AS USSR)

AVAILABLE: Library of Congress

1. Dielectrics---Theory 2. Electrons---Applications 3. Magnetic fields---Effectiveness

Card 4/4

AUTHOR: Pisarenko, V. F., Balygin, I. Ye.,
Fedoseyev, G. P., Tonkonogov, M. P., Fridberg, I. D.,
Tolpygo, K. B., Konorova, Ye. A., Skanavi, G. I.

TITLE: Discussions on Lectures by: S. M. Bragin, G. A. Vorob'yev, and A. A. Vorob'yev; L. A. Sorokina and Ye. A. Konorova; V. D. Kuchin; Ye. A. Konorova, V. V. Krasnopevtsev and G. I. Skanavi (Preniya po dokladam: S. M. Bragina; G. A. Vorob'yeva, i A. A. Vorob'yeva; L. A. Sorokinoy i Ye. A Konorovoy; V. D. Kuchina; Ye. A. Konorovoy, V. V. Krasnopevtseva, i G. I. Skanavi)

PERIODICAL: Izvestiya Akademii Nauk, SSSR Seriya Fizicheskaya, 1958, Vol. 22, Nr 4, pp. 413-414 (USSR)

Abstract: V. B. Pisarenko criticises the paper by G. A. Vorob'yev and A. A. Vorob'yev. He maintains, that in the investigation of the breakdown of colored rock salt the influence of space charge was not taken into consideration. I. Ye. Balygin maintains, that the experiments by Bragin are of great importance, as little research has hitherto been conducted in this field, In the lecture and Vorob'yev the division of breakdown into two stages was not sufficiently proved. He considers the method by Sorokina to be unreliable G. P. Fedoseyev states with respect to the lecture by Bragin

The Results are to be considered of great practical interest. The investigation, however, is incomplete and therefore cannot be recommended for practical technology. M. P. Tonkonogov condiders the lecture by Bragin as valuable for the clarification of the interconnection between the phenomena of dielectric losses and the phenomena of breakdown. I. D. Fridberg discusses the lecture by Bragin and communicates his own experience in this field. K. B. Tolpygo contests the resutls communicated in the lecture by Krasnopevtsev, Konorova and Skanavi. Ye. A. Konorova answers Balygin and states, that an overlapping of samples was impossible. Methodical modification in comparison to the thirties are represented by an employment. of qualitatively better samples, purer raw materials and of a previous treatment as well as by the fact, that the measurements of breakdown voltage are conducted more accurately. G. I. Skanavi comments on the lecture by Vorob'yev and Vorob'yev states that the attempt to obtain data on the second stage of breakdown proves to be of interest. The apprehensions of the authors regarding this problem are to be noticed. Subsequently he deals with some experiments of his own. There is 1 figure.

KONOROVA, Ye. A.

AUTHORS: Chuyenkov, V. A., Astafurov, A. V., Konorova, Ye. A., Koritskiy, Yu. V., Odoyevskiy, V. A. 48-22-4-18/24

TITLE: Discussion on the Lectures Held by G. A. Andreyev; A. V. Astafurov; K. K. Sonchik; I. Ye. Balygin (Prenija po dokladam: G. A. Andreyeva; A.V. Astafurova; K.K. Sonchika; I.Ye. Balygina)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1958, Vol. 22, Nr 4, pp. 438-438 (USSR)

ABSTRACT: V. A. Chuyenkov maintains, that the experiments by Krasin, which were conducted at Tomsk show the opposite of the assertions by Balygin. For this reason the problem cannot be considered solved. The experiments by Astafurov proved to be interesting. A. B. Astafurov critizes the lecture by Balygin. He maintains, that the fact of a double or treble breakdown of the liquid under a single pulse seems somewhat peculiar, in particular, as these subsequent breakdowns occur at a reduction of voltage. It is possible, that this phenomenon is due to the insufficiencies of the circuits. As the author performed no degassing of the liquid, the values of the breakdown voltage obtained by him are obviously too low. The physical process recorded on the oscillographs is dis-

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torted because of gas inclusions. Ye. A. Konorova states, that the experimental results obtained by Andreyev do not contradict the results obtained by her. Astafurov overlooked a fault in his work, consisting of an insufficient contact of the electrode and the ice. Ye. V. Koritskiy remarked, concerning the lecture by Andreyev, that it is inevitably necessary to take into account the dependence of dielectric strength upon the duration of the voltage application (exposure) in the examination of the rules governing electric breakdown. This was not done by the author. Another contradiction appears in the lecture, consisting of the fact, that the factor influencing the magnitude of the current previous to disruption has no influence on the dielectric strength in thermal breakdown. The lecturer said with respect to the lecture by Balygin, that it was a great drawback of the work not to purify sufficiently the samples of the investigated liquids. V. A. Odoyevskiy criticizes the work by A. A. Vorob'yev and his coworkers and is of opinion, that they dealt with the same subject in several variations, without analyzing the physics

Discussion on the Lectures Held by G. A. Andreyev; A. V. Astafurov; K. K. Sonchik; I. Ye. Balygin

48-22-4-18/24

of the mechanism. Their assertions have been refuted for a long time.

AVAILABLE: Library of Congress

1. Scientific reports--Critic

Card 3/3

AUTHORS: Konorova, Ye. A., Sorokina, L. A. SOV/57-58-8-10/37

TITLE: On the Influence of Electrode Material and of Thermal Treatment of the Samples on the Electrical Strength of Alkali-Halide Crystals (O vliyanii materiala elektrodov i teplovoy obrabotki obraztsov na elektricheskuyu prochnost' shchelochno-galoidnykh kristallov)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Nr 8, pp. 1676 - 1678 (USSR)

ABSTRACT: This is a study of the influence of the electrode material and of the thermal treatment upon the electric strength at room temperature and upon the nature of the temperature dependence on the breakdown voltage. The method of the production of the samples and the experimental method were described already in reference 3. The thermal treatment of the samples is described in short. The evidence obtained permits to draw the following conclusions: 1) the electric strength of the crystals in question is independent of the electrode material at temperature above 100°C. 2) The thermal treatment previous to the application of the electrode exerts an influence upon the nature of the temperature dependence of the

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breakdown voltage $E_{breakdown}$ which is smaller that that exerted by the electrode material. The influence of this factor upon the electric strength of samples with gold electrodes can be explained on the basis of the hypothesis of A.Hippel (Ref 1). According to this hypothesis the contact between the electrode and the crystal is improved by evaporating the metal onto the heated surface of the crystal. This facilitates electron emission into the crystal which again leads to an increase of the electron space charge and hence also to a shift of the maximum towards higher temperatures. 3) The nature of the temperature dependence of the electric strength of samples with gold electrodes applied to a heated surface agrees with the data obtained by A.Hippel and R.S.Alger (Ref 1). The absolute values of electric strength obtained in this investigation are higher than those given in reference 1. It is believed, that this is caused by errors in the experimental method. 4) The only reasonable explanation of the dependence of electric

On the Influence of Electrode Material and of Thermal Treatment of the Samples on the Electrical Strength of Alkali-Halide Crystals

SOV/57-58-8-10/37

strength of crystals upon temperature which can be advocated at present is the hypothesis of A.Hippel (Ref 1). The Head of the Laboratory Professor G.I.Skanavi was interested in this work. There are 1 figure, 1 table, and 8 references, 2 of which are Soviet.

ASSOCIATION: Fizicheskiy institut im.P.N.Lebedeva AN SSSR Moskva (Physics Institute imeni P.N.Lebedev, AS USSR, Moscow)

SUBMITTED: September 18, 1957

Card 3/3

80026
S/048/60/024/01/04/009
B006/B014

24.2400

AUTHOR: Konorova, Ye. A.

TITLE: Currents in Alkali Halide Crystals, Which Are Caused by Electron Emission From the Cathode in Strong Electric Fields

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 1, pp. 58-65

TEXT: The mechanism underlying electric breakdown in dielectrics has not yet been fully explained although a great number of experimental and theoretical studies have been performed on this subject. The article under review (read at the Second All-Union Conference on the Physics of Dielectrics, Moscow, November 20-27, 1958) offers a contribution to these problems. Deviations of volt-ampere characteristics in strong fields from Ohm's law have been detected in various experiments. This is explained by the following mechanism: As soon as the field at the cathode exceeds a certain value, a great number of electrons surpasses the potential barrier and penetrates into the crystal. These electrons are partly captured by defects, and a negative space charge is formed at the cathode, which

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in a table. It is shown that in strong, pulsating fields the function I(E) differs greatly from that holding for a constant field strength. The assumptions made at the beginning are confirmed by the experimental results.
In conclusion, the author thanks G. I. Skanavi for his interest displayed in this article. There are 14 figures, 1 table, and 7 references, 5 of which are Soviet.

4

Card 3/3

80027

S/048/60/024/01/05/009
B006/B014

24.7700

AUTHORS: Afanas'yeva, Ye. A., Vinogradov, V. S., Konorova, Ye. A.

TITLE: Dependence of the Currents in KBr Single Crystals on the Temperature and Voltage in the Pre-breakdown Field

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 1, pp. 66-74

TEXT: The article under review was read at the Second All-Union Conference on the Physics of Dielectrics (Moscow, November 20-27, 1958). One of the authors, Konorova, showed that a voltage pulse applied to a KBr crystal generates a current that exceeds the one produced by constant voltage and the same field strength by several orders of magnitude. This effect seems to confirm the hypothesis of autoelectronic emission from the cathode in a crystal located within a strong field. The authors first discuss the theory of this phenomenon. The arising kinetic problem is treated with a set of equations which corresponds to the one used in the phenomenological theory of semiconductors. The representation is based on an energy-level scheme shown in Fig. 1. The following section

Card 1/2

S/053/60/071/004/004/004
B004/B056

AUTHORS: Vul, B. M., Konorova, Ye. A., Demeshina, A. I.

TITLE: Georgiy Ivanovich Skanavi (Deceased)

PERIODICAL: Uspekhi fizicheskikh nauk, 1960, Vol. 71, No. 4, pp. 681 - 685

TEXT: On November 11, 1959 G. I. Skanavi, a prominent Soviet research scientist in the field of dielectrics died. He was Head of the laboratoriya fiziki dielektrikov Fizicheskogo instituta im. P. N. Lebedeva AN SSSR (Laboratory of Physics of Dielectrics of the Institute of Physics imeni P. N. Lebedev of the AS USSR) and Professor of the Moskovskiy gosudarstvennyy universitet im. Lomonosova (Moscow State University imeni Lomonosov). Skanavi finished his studies at the Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute) in 1931, and began working at the plant "Elektrosila", where he had already given proof of his abilities of a research worker in the works laboratory. In 1935 he entered the Nauchno-issledovatel'skiy institut radiopromyshlennosti (Scientific Research Institute of the

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Radio Industry), and in 1940 he began his activities at the Institute of Physics imeni B. N. Lebedev of the AS USSR, first in the capacity of senior scientific worker, and later as deputy of the Head of the elektrofizicheskaya laboratoriya (Electrophysical Laboratory), and since 1954 as Head of the Laboratory of the Physics of Dielectrics, which became the leading laboratory in this field of the Soviet Union. The first works (1931-1935) of the deceased dealt with the high-voltage insulation of electrical machines. His method of removing the corona, and his method of testing insulation were used in industry. Skanavi became Candidate of Physical and Mathematical Sciences in 1937. Many of his works dealt with the dielectric losses and with polarization in glasses. Skanavi drafted the theory of relaxative losses, and discovered the neutralization- and crystallization effect of loss reduction. During the war he investigated polycrystalline dielectrics at the Institute of Physics, produced new dielectrics with a high dielectric constant, and developed a theory, which explains the high dielectric constant of crystals. It was upon these works that the Doctor's dissertation defended by him in 1946 was based. For the industrial production of ceramic capacitors developed by him, he was awarded the Stalin Prize

KONOROVA, Ye. A., SOROKINA, L. A.

"On Field Emission from Metals into Alkaline Halide Crystals"

Paper presented at the IUPAP International Conference on Photoconductivity, Ithaca, New York, 21-24 Aug 1961.

P. N. Lebedev Institute of Physics.

S/181/61/003/010/021/036
B104/B108

AUTHORS: Konorova, Ye. A., and Sorokina, L. A.

TITLE: Photoconductivity of uncolored alkali-halide crystals stimulated by a strong electric field

PERIODICAL: Fizika tverdogo tela, v. 3, no. 10, 1961, 3100 - 3104

TEXT: The authors examined KBr and KCl specimens grown by the Kiropulos method from ЧДА (ChDA) salt, and natural rock salt. The shapes of the specimens are shown in Fig. 1. Measurements were made in a vacuum chamber (10^{-5} mm Hg) at temperatures between +200 and -190°C. A voltage of 10 kv was applied to the specimens, and they were illuminated through a quartz window. The photocurrent was either recorded by a d-c amplifier or modulated with light (425 cps) and recorded by a selective amplifier on the tape of an ЭПП-09 (EPP-09) potentiometer. An incandescent lamp and a ПРК-2 (PRK-2) mercury tube served as light sources. The use of a УМ-2 (UM-2) monochromator ensured a spectrum from 400 to 700 mμ. The light intensity was measured with a selenium photocell. For measurements crystals were used, which showed no photoconductivity in fields of up to

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$5 \cdot 10^4$ v/cm. A strong electric field ($(1-5) \cdot 10^5$ v/cm) was applied to these crystals. After a short time the field was removed, and the electrodes were closed over a measuring circuit. At first, the current in the measuring circuit dropped rapidly, but later became constant. This confirms the existence of a weak polarization field. If an electron charge exists in the specimen, illumination will cause current that decays with the drop of the volume charge (Fig. 2). The amount of the volume charge depends on the voltage applied to the specimen. At a mean field strength of $5 \cdot 10^5$ v/cm, the volume charge of an NaCl crystal is $10^{-9} - 10^{-10}$ coulombs. The volume charge of KBr and KCl is 10^{-11} coulombs. The corresponding electron densities are $10^{12} - 10^{11}$ cm^{-3} and 10^{10} cm^{-3}. Below a certain threshold voltage no electron charge is accumulated in the specimens. This threshold voltage is 2 kv for NaCl crystals and 4 kv for KBr and KCl crystals. The charge is virtually independent of temperature. The photoconductivity described above was observed only, when the crystals were illuminated only with light whose wavelength was in the F-band. Further measurements were made with a constant external voltage being applied to the specimens. It is shown that

21.7100
15.2640

30787
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B125/B102

AUTHORS: Vodop'yanov, L. K., and Konorova, Ye. A.

TITLE: Electrical properties of neutron-bombarded $SrTiO_3$ single crystals

PERIODICAL: Fizika tverdogo tela, v. 3, no. 11, 1961, 3426-3428

TEXT: The dielectric constant ε, the dielectric losses, the conductivity, and the optical absorption in the visible and infrared regions of the spectrum of $SrTiO_3$ single crystals, grown by the Verneuil method, were measured before and after irradiation with integral fluxes (10^8 cm^{-2}) of slow neutrons. The temperature dependence of ε and $\tan\delta$ measured before and after irradiation coincided in the interval of 20-200°C. The temperature dependence of dielectric constant and conductivity at 1 kc/sec is shown in Fig. 1. An abnormal maximum of hitherto unknown nature was detected by Lipareva at 470°C. It vanished after irradiation, and a weaker maximum appeared at higher temperatures. Irradiation seemed to increase the diffusion coefficient. As a result, oxygen atoms in the

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Electrical properties of...

lattice migrate to their proper sites. On the other hand, the variation of the temperature dependence might be due to a lattice defect. Heating in a vacuum of $\sim 10^{-6}$ mm Hg leads to irreversible processes caused by oxygen losses for instance, to an irreversible increase of the electrical conductivity of $SrTiO_3$ crystals. The activation energy was calculated from the temperature dependence of the electrical conductivity and was found to be 0.44 ev. It is difficult to draw conclusions as to the mechanism of conductivity variations from the available experimental data. The additional electrical conductivity caused by irradiation seems to consist of two components: One of them is caused by radiation defects, and the other is due to ionization processes occurring in the sample caused by its radioactivity. The ultraviolet and infrared absorption edges coincided satisfactorily with experimental data. No essential variations were observed in the short-wave range of the spectrum extending to 1.5 μ. The samples had a significant transparency (up to 15 %) in the long-wave range of the spectrum after irradiation. There are 2 figures and 3 references: 2 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: J. A. Noland. Phys. Rev., 94, 3, 724, 1954;

Card 2/4 3

S/181/61/003/011/028/056
B125/B102

Electrical properties of...

H. W. Landy. Phys. Rev., 113, 3, 795, 1959.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR Moskva
(Physics Institute imeni P. N. Lebedev AS USSR, Moscow)

SUBMITTED: June 14, 1961

Fig. 1. Temperature dependence of dielectric constant ε and conductivity for alternating current, j, before and after irradiation of an $SrTiO_3$ single crystal.

Legend to Fig. 1: (1) ε before irradiation; (2) j before irradiation; (3) ε after irradiation; (4) j after irradiation.

Fig. 2. Temperature dependence of electrical conductivity for direct current of an $SrTiO_3$ crystal before and after irradiation.

Legend to Fig. 2: (1) first direct way; (2) first reverse way; (3) second direct way; (4) second reverse way; (5) direct way after irradiation; (6) reverse way after irradiation.

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VODOP'YANOV, L.K.; KONOROVA, Ye.A.

Electric properties of $SrTiO_3$ single crystals irradiated by neutrons. Fiz.tver.tela 3 no.11:3426-3428 N '61. (MIRA 14:10)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR, Moskva.
(Strontium titanate crystals--Electric properties)
(Neutrons)

ACCESSION NR: AT4016321 S/0000/62/000/000/0377/0380

AUTHOR: Konorova, Ye. A.; Sorokina, L. A.

TITLE: Photoconductivity stimulated by a strong electric field in colorless alkali halide crystals

SOURCE: Vses. soveshch. po fiz. shchelochnogaloidn. kristallov. 2d, Riga, 1961. Trudy*. Fiz. shchelochnogaloidn. kristallov (Physics of alkali halide crystals). Riga, 1962, 377-380

TOPIC TAGS: alkali halide, alkali halide crystal, photoconductivity, colorless alkali halide crystal, crystal photoconductivity, electron charge

ABSTRACT: In order to establish the occurrence of an electric-field-induced electron charge in colorless alkali halide crystals, a $1 - 5 \times 10^5$ v/cm voltage was passed through KBr, KCl- and NaCl-crystals at temperatures ranging from room temperature to that of liquid nitrogen. The crystals were then routed through a measuring device. As the current set up by the weak polarization field in the specimen became constant, the electron charge was established by the presence of the photoelectric current which it generates under illumination. This photoelectric current, superimposed on the polarization field current, vanishes as the 10^{-9}- 10^{-10} coulomb (in NaCl) or 10^{-11} coulomb

Card 1/2

AFANAS'YEVA, Ye.A.; KONOROVA, Ye.A.

Some characteristics of α-particle counting by type I diamonds.
Fiz. tver tela 5 no.9:2556-2560 S '63. (MIRA 16:10)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR, Moskva.

AFANAS'YEVA, Ye.A.; KONOROVA, Ye.A.

Preamplifier combined with a low-capacitance crystal counter.
Prib. i tekh. eksp. 8 no.5:110-111 S-O '63. (MIRA 16:12)

1. Fizicheskiy institut AN SSSR.

L 52503-65 EWT(l)/EWP(e)/EWT(m)/EWP(i)/EEC(t)/EWP(t)/EWP(b)/ Pz-6 IJP(c)

ACCESSION NR: AP5010716 UR/0181/65/007/004/1092/1094

AUTHOR: Konorova, Ye. A.; Sorokina, L. A.; Shevchenko, S. A.

TITLE: Photoconductivity of diamonds in the ultraviolet part of the spectrum

SOURCE: Fizika tverdogo tela, v. 7, no. 4, 1965, 1092-1094

TOPIC TAGS: diamond, nitrogen content, photoconductivity, absorption coefficient, ultraviolet property

ABSTRACT: In an attempt to identify the transitions with which the near-ultraviolet absorption in diamonds is connected, and to ascertain whether it is due to the presence of nitrogen atoms present in the lattice or the lattice atoms themselves in the nearest vicinity of the nitrogen atoms, the authors investigated photoconductivity spectra and absorption spectra of 25 natural diamonds containing from ~10^{-6} to 1.8 x 10^{-3} atoms of nitrogen per cubic centimeter. The spectra were plotted in the intervals 0.6—4 and 2—10 μ. The coefficient of absorption in the visible region was found to be 0 down to 400 nm. The absorption coefficient did not exceed 2 cm^{-1} above 320 nm, after which it started to increase at different rates for different samples. The photoconductivity spectra displayed

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ACCESSION NR: AP5010716 2

two maxima, at 225 and 255 nm, the former for all diamonds and the latter only for diamonds containing nitrogen. The coefficient of absorption at long wavelengths (7.5 μ) was appreciable (31.5) only for the sample with the maximum nitrogen concentration (1.8×10^{20}). The spectral dependence of the photocurrent does not agree with the spectral dependence of the absorption coefficient, and it is assumed that part of the light of the crystal is absorbed without excitation of the photoconductivity. In the case of large nitrogen content, which may be present in the diamond in the form of layers (rather than individual donors), the photoconductivity may be due to detachment of an electron from the nitrogen atom in the layer. "The authors thank V. S. Vavilov for interest in the work." Orig. art. has: 2 figures and 1 table. [02]

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR, Moscow (Physics Institute, AN SSSR)

SUBMITTED: 09Oct64 ENCL: 00 SUB CODE: OP, SS

NO REF SOV: 000 OTHER: 008 ATD PRESS: 4008

Card 2/2

...ROVA, Yo.A.; SOROKINA, L.A.

Temperature dependence of the electric strength of alkali halide crystals. Fiz. tver. tela 7 no.5:1475-1479 My '65. (MIRA 18:5)

1. Fizicheskiy institut imeni Lebedeva, Moskva.